ARKANSAS TECH UNIVERSITY

General Education Course Objectives and Learning Outcomes

Course Name: General Chemistry II

Course Number: CHEM 2134

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Department: Physical Science

COMMON COURSE OBJECTIVES AND STUDENT LEARNING OUTCOMES THAT ARE OR WILL BE LISTED ON THE SYLLABUS OF EVERY SECTION OF THIS COURSE:	
Course objectives:	CHEM 2134 builds upon the fundamental chemical principles learned in the first semester course CHEM 2124. This course provides a broad foundation in chemistry and continues developing student skills to better understanding how chemical phenomena shape our world. CHEM 2134 include laboratory experiments stressing scientific reasoning and analytical problem solving
Student learning outcomes:	Upon successful completion of CHEM 2134, students should be able to: • Identify intermolecular forces and their relationship to molecular structures. • Describe the effect of solution composition on properties of a solution. • Use the collision model theory to describe the factors that affect reaction rates and calculate the resulting rate. • Determine the concentrations of reactants and products at equilibrium for various chemical reactions. • Describe the thermodynamic relationship between enthalpy, entropy, and free energy and their effect on equilibrium. • Use the fundamentals of equilibrium to explain the properties and applications of acid-base reactions. • Apply the safety rules and regulations to promote a safe laboratory environment for all students/personnel. • Perform and record measurements with appropriate equipment, correct precision and proper units. • Analyze data and draw conclusions, which are supported by the experimental data. • Communicate results with clear, scientific language in well-documented lab reports.
ADHE ACTS INFORMATION FOR THIS COURSE (IF APPROPRIATE)	
ACTS Course number:	CHEM 1424
Copy the ACTS course objectives and learning outcomes:	Continuation of CHEM 1414. Designed for chemistry and other science majors, and preprofessional students. Includes more in-depth study of chemical reactions. Lab required. This is an algebra-based chemistry course and it is strongly recommended that the student should have completed College Algebra (MATH 1103) and Chemistry I for Science Majors (CHEM 1414) with a "C" or better. Expected Student Learning Outcomes: The student will explain, describe, discuss, recognize, and apply knowledge of the following: • Intermolecular forces • Properties of solutions • Thermodynamics • Chemical Kinetics • Mechanisms of chemical reactions • Acid/base theory

	• Equilibrium of chemical reactions, including solubility • Equilibrium of acid/base mixtures, including titration • Oxidation-reduction • Electrochemistry

WHICH ATU GENERAL EDUCATION GOALS DOES THIS COURSE FULFILL? (NO MORE THAN TWO)

Communicate effectively

Written communication

Oral communication

Think critically

Develop ethical perspectives

Diversity

Empathy

Leadership

X Apply scientific and quantitative reasoning

Scientific reasoning

Quantitative reasoning

Apply the value of the arts and humanities

Practice civic engagement

DESCRIPTION OF HOW THIS COURSE MEETS THE GENERAL EDUCATION GOALS CHOSEN ABOVE (TO BE INCLUDED ON THE SYLLABUS OF EVERY SECTION OF THIS COURSE)

- Use the fundamentals of equilibrium to explain the properties and applications of acid-base reactions. (Aligns with the General Education Goal: Apply scientific reasoning and quantitative reasoning).